

# *Announcements*

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## ▣ FINAL EXAM:

- PHYS 132-001: Wednesday, May 10 @ 10-11:50 am

## ▣ Office hours...

F 12-1 pm

## ▣ Tutorial Learning Center (TLC) hours:

MTWR 8-6 pm

F 8-11 am, 2-5 pm

Su 1-5 pm

# Outline...

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## ***CH 25 – Electric Charges & Forces***

- ▣ Developing a Charge Model
- ▣ Charge
- ▣ Insulators & Conductors
- ▣ Coulomb's Law
- ▣ The Field Model

## ***CH 26 – The Electric Field***

- ▣ Electric Field Models
- ▣  $E$ -Field of Multiple Pt. Charges
- ▣  $E$ -Field of a Continuous Charge Distribution
- ▣  $E$ -Fields of Rings, Disks, Planes, & Spheres
- ▣ The Parallel-Plate Capacitor
- ▣ Motion of a Charged Particle in an  $E$ -Field
- ▣ Motion of a Dipole in an  $E$ -Field

## ***CH 27 – Gauss's Law***

- ▣ Conductors in Electrostatic Equilibrium

## ***CH 28 – The Electric Potential***

- ▣ Electric Potential Energy
- ▣ The Potential Energy of Point Charges
- ▣ The Electric Potential
- ▣ The Electric Potential inside a Parallel-Plate Capacitor
- ▣ The Electric Potential of a Point Charge
- ▣ The Electric Potential of Many Charges

# Outline...

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## ***CH 29 – Potential & Field***

- ▣ Connecting Potential and Field
- ▣ Sources of Electric Potential
- ▣ Finding the  $E$ -field from the Potential
- ▣ A Conductor in Electrostatic Equilibrium
- ▣ Capacitance and Capacitors
- ▣ The Energy Stored in a Capacitor

## ***CH 30 – Current and Resistance***

- ▣ The Electron Current
- ▣ Creating a Current
- ▣ Current and Current Density
- ▣ Conductivity and Resistivity
- ▣ Resistance and Ohm's Law

## ***CH 31 – Fundamentals of Circuits***

- ▣ Circuit Elements and Diagrams
- ▣ Kirchhoff's Laws and the Basic Circuit
- ▣ Energy and Power
- ▣ Series Resistors
- ▣ Real Batteries
- ▣ Parallel Resistors
- ▣ Resistor Circuits

# Outline...

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## ***CH 32 – The $B$ -Field***

- ▣ Magnetism
- ▣ The Discovery of the  $B$ -Field
- ▣ The Source of the  $B$ -Field: Moving Charges
- ▣ The  $B$ -Field of a Current
- ▣ Magnetic Dipoles
- ▣ The Magnetic Force on a Moving Charge
- ▣ Magnetic Forces on Current-Carrying Wires
- ▣ Forces and Torques on Current Loops

## ***CH 33 – Electromagnetic Induction***

- ▣ Induced Currents
- ▣ Motional emf
- ▣ Magnetic Flux
- ▣ Lenz's Law
- ▣ Faraday's Law

## ***CH 34 – Electromagnetic Fields and Waves***

- ▣ Electromagnetic Waves
- ▣ Properties of Electromagnetic Waves
- ▣ Polarization

# Outline...

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## ***CH 20 – Traveling Waves***

- ▣ EM waves
- ▣ Index of Refraction

## ***CH 22 – Wave Optics***

- ▣ Light and Optics
- ▣ The Interference of Light
- ▣ Double-Slit Interference
- ▣ The Diffraction Grating
- ▣ Single-Slit Diffraction

## ***CH 23 – The Ray Model of Light***

- ▣ Reflection
- ▣ Refraction
- ▣ Total Internal Reflection
- ▣ Image Formation by Refraction
- ▣ Color and Dispersion
- ▣ Thin Lenses: Ray Tracing
- ▣ Thin Lenses: Refraction Theory